

Amendments to the Claims:

The listing of the claims will replace all prior versions, and the listing of claims in the application:

Listing of Claims:

1.(currently amended) A method of operating an electrodeionization apparatus which includes an anolyte compartment having an anode, a catholyte compartment having a cathode, at least one concentrating compartment containing at least one of ion-exchanger, activated carbon and electric conductor, and at least one desalting compartment containing ion-exchanger, the concentrating compartment and the desalting compartment being formed between the anolyte compartment and the catholyte compartment by arranging at least one anion-exchange membrane and at least one cation-exchange membrane, the desalting compartment being filled with ion-exchanger, the concentrating compartment being filled with at least one of ion-exchanger, activated carbon, and electric conductor,

wherein the electrodeionization apparatus produces deionized water by , said method comprising:

supplying electrode water into the anolyte compartment and the catholyte compartment;

supplying concentrated water into the concentrating compartment; and

feeding raw water into the desalting compartment through an inlet thereof so that compartments to produce the deionized water flows out from the desalting compartment through an outlet thereof; and

wherein the concentrated water includes at least one of silica and boron at a lower concentration than the raw water, and the concentrated water is introduced supplying a part of the deionized water into the concentrating compartment at from a side near an adjacent to the outlet for deionized water of the desalting compartment and ejecting the part of the deionized water as concentrated water from flows out of the concentrating compartments compartment from at a side near an adjacent the inlet for the raw water of the desalting compartment so that the part of the deionized water introduced in the concentrating compartment flows in a direction opposite to the raw water flowing through the

desalting compartment, and wherein at least a part of the concentrated water flowing out of the concentrating compartment is being discharged out of a circulatory system.

2. (currently amended) A method of operating an electrodeionization apparatus as claimed in claim 1, wherein the concentrated water flows in the concentrating compartment in single-pass counter-flow manner relative to the raw water flowing in the desalting compartment.

3. (currently amended) A method of operating an electrodeionization apparatus as claimed in claim 1, wherein the water supplied to the concentrating compartment is at least one of desalted water or directly obtained from the electrodeionization apparatus, and treated water produced by further treating the desalted water by another apparatus such as an ion exchange apparatus, and ultra-pure water is introduced into the concentrating compartment as the concentrated water.

4. (original) A method of operating an electrodeionization apparatus as claimed in claim 1, wherein the anolyte compartment and the catholyte compartment are filled with at least one of activated carbon, ion-exchanger, and electric conductor.

5. (currently amended) A method of operating an electrodeionization apparatus as claimed in claim 1, wherein

the anode is in contact with [[a]] the cation-exchange membrane which defines the anolyte compartment,

the cathode is in contact with [[an]] the anion-exchange membrane which defines the catholyte compartment, and

the anode and the cathode are each provided, at least at a side being in contact with the corresponding membrane, with a porous structure having continuous multiple apertures through which the electrode water flows.

6. (currently amended) A method of operating an electrodeionization apparatus as claimed in claim 1, wherein the line velocity (V) of

the concentrated water flows in the concentrating compartment is at a line velocity (LV) of 20 m/hr or less.

7. (currently amended) A method of operating an electrodeionization apparatus as claimed in claim 1, wherein the thickness of the desalting compartment is has a thickness of 2-5 mm.

8. (currently amended) A method of operating an electrodeionization apparatus as claimed in claim 1, wherein the electrodeionization apparatus is operated under current has a current value such that the current efficiency of the electrodeionization apparatus expressed by the following equation is 10% or less:

$$\text{Current Efficiency } (\%) = 1.31 \left[\frac{\text{flow rate per cell (L/min)} \times [\text{equivalent conductivity of raw water } (\mu\text{S/cm})] - [\text{equivalent conductivity of treated water } (\mu\text{S/cm})]}{\text{current (A)}} \right]$$

9. (currently amended) A method of operating an electrodeionization apparatus as claimed in claim 8, wherein the electrodeionization apparatus is operated under current has a current value that the current efficiency is 5% or less.

10. (currently amended) An electrodeionization apparatus comprising:
an anolyte compartment having an anode;
a catholyte compartment having a cathode;
at least one concentrating compartment having an inlet and an outlet;
at least one desalting compartment situated adjacent to the at least one concentrating compartment and having an inlet adjacent to the outlet of the at least one concentrating compartment and an outlet adjacent to the inlet of the at least one concentrating compartment, wherein the concentrating compartments compartment and the desalting compartments compartment are formed between the anolyte compartment and the catholyte compartment by arranging at least one anion-exchange membrane and at least one cation-exchange membrane;
ion-exchanger with which the desalting compartment is filled;
at least one of ion-exchanger, activated carbon, and electric conductor which fills the concentrating compartment;

a device for introducing electrode water into the anolyte compartment and the catholyte compartment, respectively;

~~a concentrated water introducing device for introducing concentrated water into the concentrating compartments; and~~

~~a device for feeding raw water into the desalting compartment through the inlet thereof to produce so that the deionized water, flows out of the desalting compartment through the outlet thereof; and~~

~~wherein the a concentrated water introducing device introduces water containing at least one of silica and boron at a lower concentration than the raw water for introducing a part of the deionized water into the concentrating compartments at a side near an compartment from the inlet adjacent to the outlet for the deionized water of the desalting compartment, the , said concentrated water introducing device makes the discharging concentrated water flow out of the concentrating compartment at from the outlet adjacent to the a-side near an inlet for the raw water of the desalting compartment; and the concentrated water introducing device discharges and further discharging at least a part of the concentrated water flowing out of the concentrating compartments compartment out of a circulatory system.~~

12
11.(currently amended) An electrodeionization apparatus as claimed in claim ~~10,11~~ wherein the concentrated water introducing device introduces the concentrated water into the concentrating compartment in single-pass counter-flow manner relative to the raw water flowing in the desalting compartment.

13
11.(currently amended) An electrodeionization apparatus as claimed in claim ~~10,11~~ wherein the concentrated water introducing device introduces one of the desalted water produced by the electrodeionization apparatus, and treated water prepared by further treating the desalted water by apparatus such as an another ion exchange apparatus, and ultra pure water is introduced into the concentrating compartment as the concentrated water.

14
11.(original) An electrodeionization apparatus as claimed in claim ~~10,11~~ wherein the anolyte compartment and catholyte compartment are

filled with at least one of activated carbon, ion-exchanger, and electric conductor.

15

14. (currently amended) An electrodeionization apparatus as claimed in claim ~~10, 11~~, wherein the anode is in contact with [[a]] the cation-exchange membrane which defines the anolyte compartment,

the cathode is in contact with [[an]] the anion-exchange membrane which defines the catholyte compartment, and

the anode and the cathode are each provided, at least at a side being in contact with the corresponding membrane, with a porous structure having continuous multiple apertures through which the electrode water flows in the anolyte compartment and the catholyte compartment.

16

15. (currently amended) An electrodeionization apparatus as claimed in claim ~~10, 11~~ wherein the line velocity (LV) of the concentrated water in the concentrating compartment is introducing device provides the water to flow at a line velocity (LV) of 20 m/hr or less.

17

16. (currently amended) An electrodeionization apparatus as claimed in claim ~~10, 11~~ wherein the thickness of the desalting compartment is has a thickness of 2-5 mm.

18

17. (currently amended) An electrodeionization apparatus as claimed in claim ~~10, 11~~ wherein the anode and cathode receives a current has at a current value such that the current efficiency of the electrodeionization apparatus expressed by the following equation is 10% or less:

$$\text{Current Efficiency (\%)} = \frac{1.31 \times [\text{flow rate per cell (l/min)} \times (\text{equivalent conductivity of raw water } (\mu\text{S/cm}) - \text{equivalent conductivity of treated water } (\mu\text{S/cm}))]}{\text{current (A)}}$$

19

18. (currently amended) An electrodeionization apparatus as claimed in claim ~~10, 11~~ wherein the current has a current value that the current efficiency of the electrodeionization apparatus expressed by the following equation is 5% or less.

20
19. (original) A system for producing ultra pure water comprising the electrodeionization apparatus as claimed in claim *20.11*

21
20. (currently amended) A system for producing ultra pure water as claimed in claim *19.20*, further comprising an ultrafiltration membrane separation apparatus into which the deionized water from the electrodeionization apparatus is introduced, wherein the concentrated water from the ultrafiltration membrane separation apparatus is introduced into the concentrating compartment of the electrodeionization apparatus.

10
21. (new) A method of operating an electrodeionization apparatus as claimed in claim 1, wherein a part of the deionized water is introduced into the anolyte compartment.

22
22. (new) An electrodeionization apparatus as claimed in claim *10*, wherein the device for introducing the electrode water into the anolyte compartment introduces a part of the deionized water into the anolyte compartment.